Application No. 10/088,282

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A compound capable of binding to a picornavirus capsid comprising two or more capsid binding moieties, wherein the capsid binding moiety is derived from a compound of formula (I)

$$Ar^1(X)_mW(Y)_nAr^2 \quad (I)$$

where Ar^1 and Ar^2 are optionally substituted aryl groups, which may be the same or different;

X and Y are independently selected from O, S, CO, C(I)O, CONR or NR, where R is hydrogen or C_{1-6} alkyl;

W is a divalent spacer group; and

m and n are independently 0 or 1.

2. (Original) A compound according to claim 1 wherein the picornavirus capsid is a HRV capsid.

3. (Original) A compound according to claim 2 wherein the capsid binding moiety is a functional binding residue of a HRV capsid binding compound.

4. (Original) A compound according to claim 1 wherein the capsid binding moieties are covalently attached to a non-polymeric backbone or core, such that two or more of the capsid binding moieties are able to bind within separate hydrophobic pockets on the same or different HRV capsids simultaneously.

5. (Original) A compound according to claim 1 having a molecular weight of less than 10,000.

6. (Original) A compound according to claim 4 wherein said non-polymeric backbone or core is the residue of a straight chain, branched or cyclic C_1-C_{70} alkyl (optionally including one or more double or triple bonds) which may include one or more heteroatoms selected from oxygen, sulfur and nitrogen; oligomers of amino acids, acrylamide, N-substituted acrylamides, acrylic acid, alkeneoxy moieties, aminoalkanoic acids, carbohydrates; small to medium sized dendritic cores; and cyclodextrins.

7. (Original) A compound according to claim 4 wherein the backbone or core includes two or more linker groups to which the capsid binding moieties are attached, said linker group being capable of passing through the picornaviral pore and having a length sufficient to allow said capsid binding moiety to reach inside and bind within a hydrophobic pocket of a picornaviral capsid.

8. (Original) A compound according to claim 7 wherein the linker groups are independently selected from alkyl, aryl, alkenyl, alkynyl, alkyleneoxy, amino acids, alkylamino, alkylcarbonyl, alkylcarboxy, alkoxy, alkylurea, alkythydrazide and combinations thereof.

9. (Original) A compound according to claim 7 wherein the backbone and/or one or more of the linkers includes a functional group or moiety which imposes restrictions on available degrees of freedom.

10. (Original) A compound according to claim 9 wherein the functional group or moiety is an alkenyl, aryl or amido group.

11. (Original) A compound according to claim 4 having between two and ten capsid binding moieties.

12. (Original) A compound according to claim 11 having five capsid binding moieties located on the backbone or core such that they bind within the five hydrophobic pockets located about one of the fivefold icosahedral axes of a picornaviral capsid.

13. (Original) A compound according to claim 1 in the form of a symmetrical dimer.

14. (Original) A compound according to claim 1 in which the capsid binding moiety is derived from a compound of formula (I)

$$Ar^1(X)_mW(Y)_nAr^2$$

where Ar^1 and Ar^2 are optionally substituted aryl groups, which may be the same or different;

X and Y are independently selected from O, S, CO, C(I)O, CONR or NR, where R is hydrogen or C_{1-6} alkyl;

W is a divalent spacer group; and m and n are independently 0 or 1.

15. (Original) A compound accordingly to claim 14 wherein the divalent spacer group is selected from optionally substituted straight chain or branched alkylene groups of from 1 to 10 carbon atoms which may have one or more double or triple bonds; optionally substituted alkyleneoxy groups; optionally substituted aryl groups; and optionally substituted aliphatic rings which may be saturated or unsaturated and which may include one or more heteroatoms selected from O, S and N.

16. (Original) A compound according to claim 15 wherein the divalent spacer group is selected from $-(CH_2)_m-$ where m is 1 to 9; $-(CH_2)_p-Z-CH_2)_q-$ where Z is an optionally substituted C_2-C_6 alkylene group containing one or more double or triple bonds; or a 5 or 6-membered aromatic or aliphatic ring which may contain one to four heteroatoms selected from O, S and N, and p and q are independently 0 to 4.

17. (Original) A compound according to claim 15 wherein the divalent spacer group is selected from $-(CH_2)_m-$ where m is 2 to 7; a group of the formula $-(CH_2)_p-Z-CH_2)_q-$ where p and q are independently 0 to 3 and Z is a five or six membered aromatic or aliphatic ring containing from 1 to 2 N atoms, or a group of the formula $-(CH=CH)_n-$ where n is 1 to 3.

18. (Original) A compound according to claim 14 wherein the capsid binding moiety is derived from Pirodavir, Pleconaril, Win 54954, Win 61605 and its biphenyl analogue, and R61837.

19. (Original) A compound according to claim 4 in which the capsid binding moiety is covalently attached to the backbone or core at a position on the capsid binding moiety located in the region at the end of the capsid binding moiety which lies near the pore of the hydrophobic pocket (heel region) during binding.

20. (Original) A compound according to claim 19 wherein the capsid binding moiety contains a functional group at its heel region capable of forming a covalent bond with the backbone or core.

21. (Original) A compound according to claim 20 wherein said functional group is selected from hydroxy, amine, azide, aldehyde, carboxylic acid and derivatives thereof, hydrazide, oxime ethers, imidazolide, hydroxamate, thioester, mercapto, halide, ketone, hydrazine, iscyanate and isothiocyanate.

22. (Original) A compound according to claim 20 wherein the covalent bond is formed between the functional group and a complementary functional group on a linker of said backbone or core.

23. (Original) A compound comprising a capsid binding moiety and having covalently attached thereto a core or backbone having at least one functional group capable of reacting with functionalised capsid binding moieties and/or detectable labels.

24. (Original) A process for the preparation of a compound as claimed in claim 4 including providing a functionalised capsid binding compound containing a first functional group at its heel region, providing a functionalised backbone or core containing two or more functional groups complementary to said first functional group, and reacting said functionalised capsid binding compound with said functionalised backbone or core to form a covalent bond between said capsid binding compound and said backbone or core.

25. (Original) A process for preparing a compound of claim 4 including providing a functionalised capsid binding compound containing a first functional group at its heel region, attaching linker group to said functionalised capsid binding compound via said functional group, said linker group possessing a second functional group capable of reacting with a backbone or core, providing a functionalised backbone or core containing two or more functional groups complementary to said second functional groups, and reacting said capsid binding compound having attached linker with said functionalised backbone or core to form a covalent bond between said linker and said backbone or core, such that said linker becomes part of the backbone or core.

26. (Original) A compound according to claim 1 including at least two different capsid binding moieties.

27. (Original) A method for the treatment of picornavirus infection including the step of administering an effective amount of a compound capable of binding to a picornavirus capsid comprising two or more capsid binding moieties.

28. (Original) A method according to claim 27 wherein the picornavirus is selected from human rhinoviruses, polioviruses, enteroviruses, hepatoviruses, cardioviruses, apthovirus and hepatitis A.

29. (Original) The use of a compound capable of binding to a picornavirus capsid comprising two or more capsid moieties in the manufacture of a medicament for the treatment of picornavirus infection.

30. (Original) A pharmaceutical composition comprising a compound according to claim 1 or a pharmaceutically acceptable salt or derivative thereof together with a pharmaceutically acceptable carrier.

31. (Original) A method according to claim 27 wherein said compound is administered in combination with known antiviral or anti-retroviral agents or other pharmaceuticals used in the treatment of viral infections.

32. (Original) An agent for detecting picornaviral infections in mammals comprising a compound according to claim 1 linked to a detectable lable.

33. (Original) A method for the diagnosis of picornaviral infections in mammals including preparing a biological sample suspected of containing picornavirus, incubating said sample with an agent of claim 32 or a compound of claim 23 comprising a detectable label for a time and under conditions sufficient to form a virus-compound complex, and detecting the presence or absence of such virus-compound complex.